

5 OPEN SPACE AND CONSERVATION ELEMENT

Alameda enjoys a variety of open space resources unique to its island location. The various elements of the City's natural environment -- the land, marshes, tidflats, and Bay waters -- constitute the foundation of the open space system and fulfill multiple open space functions supporting community health, safety, recreation, and preservation of natural resources. Within the built environment, parks and other public facilities provide open space for recreation and sports.

INTEGRATION OF THE OPEN SPACE ELEMENT AND CONSERVATION ELEMENT

In function and content, the Open Space Element and Conservation Element often overlap. The Conservation Element is oriented toward the management of natural resources to prevent waste, destruction or neglect. The Open Space Element, in comparison, emphasizes open space as a land use and requires that preservation and management of natural resources be considered in land use planning and decision-making. This combined Open Space and Conservation Element describes conservation practices within four state-designated types of open space described below, meeting the requirements of both elements. In addition, Alameda's climate and air quality are considered, as is the preservation of the City's historic and archaeologic resources.

STATE CLASSIFICATION OF OPEN SPACE

State law requires that four types of open space be analyzed in the Open Space Element: open space for the preservation of natural resources; open space for the managed production of natural resources; open space for outdoor recreation; and open space for public health and safety. It is the intent of State law that cities preparing general plans recognize open space as a limited and valuable resource to be conserved whenever possible. Any action by the City to acquire, dispose of, or regulate the use of open space lands in any of these categories must be consistent with the Open Space Element.

5.1 OPEN SPACE FOR THE PRESERVATION OF NATURAL RESOURCES

The Bay waters and tidal areas that surround Alameda sustain vital communities of animal and plant life, some listed by Federal agencies as endangered or threatened. Protection of water resources and fragile habitat recognizes the interdependent relationship between human and other living communities. This section considers water resources in three parts: water-related habitat, water quality, and water conservation.

The urban environment also comprises and provides habitat and is considered briefly in a section on urban habitat. Following this discussion is a review of the wildlife and vegetation of both water-related and urban habitat.

WATER-RELATED HABITAT

The San Francisco Bay is the largest estuary along California's coastline, and the estuarine environment of marshlands, mudflats, salt production lands, and open water supports close to 100 species of fish. As an essential portion of the Pacific Flyway, a bird migration route which spans from Canada to Mexico, the Bay supports countless migratory as well as year-round bird species. (See subsequent section on wildlife and vegetation.)

The aquatic and water-related habitat has intrinsic value not only for the individuals of a variety of plant and animal species, but also for humans. Bay Area residents derive many benefits from the Bay, including food, economic gain, recreation, scientific research, education, and aesthetics. In addition, the tidal wetlands serve a vital function in filtering out many of the pollutants in the Bay waters, and aid in buffering land from flooding.

Since the influx of population to California associated with the Gold Rush, filling and construction along the San Francisco Bay have destroyed most of the original bordering marshlands, and remaining wetlands are increasingly valued. The regional loss reflects and contributes to a statewide and national trend toward wetlands loss. The Department of Fish and Game (DFG) estimates that California has lost more than 90 percent of its wetlands; the National Wildlife Federation reports that more than half of the wetlands nationally have been destroyed.

Alameda is fortunate to have some wetlands within and surrounding the City, although repeated filling has moved the tidal wetlands progressively bayward, and the existing wetlands are not in their original, pre-European-settlement location. (See Figure 1-1.) Nonetheless, the Alameda shoreline is part of the once-extensive system of wetlands which ringed the Bay. The wetlands which border a segment of the South Shore of the Main Island at the Elsie D. Roemer Bird Sanctuary and proposed Bayview Shoreline Preserve are representative of historic tidal wetlands habitat.

Across San Leandro Bay from the Main Island, the Arrowhead Marsh, although not a part of Alameda, is another tidal wetlands, is likely ecologically linked with the wetlands of the Bird Sanctuary and Bayview Shoreline Preserve, the tidal and seasonal wetlands at the Oakland Airport, and the lagoons and sloughs throughout Bay Farm Island and the Island of Alameda. The varied wetlands habitats, as well as associated upland and open water areas, interact to form a larger ecological unit. Bird species, for example, may nest in one type of vegetation, forage or court in another, and rest elsewhere. The reduction, loss, or alteration of one habitat can decrease the abundance and diversity of wildlife in others. Water-related habitat is shown on Figure 5-1, Environmental Resources, and is reviewed briefly in the following paragraphs; habitat includes uplands, sandy areas, open water, mudflats, and eelgrass beds.

Due to the extensive filling which occurred around the perimeter of the original Alameda and Bay Farm islands, no "original" uplands remain of the historic habitat. However, some of the shoreline area functions as uplands habitat associated with wetlands, places where waterfowl and shorebirds

can rest and take refuge. The Bayview Shoreline Enhancement Plan, now in draft form, envisions the enhancement of native upland vegetation bordering the wetlands behind homes between Broadway and Ravens Cove. This project would include the development of specific plans to relocate an existing trail, a landscape restoration/enhancement project using native species, and interpretive signs, all in order to improve public access and enjoyment of the shoreline and the quality of the wildlife habitat.

Like uplands, sandy areas such as Crown Memorial State Beach, Alameda Beach, and portions of the Naval Air Station, Oakland Airport, and the Municipal Golf Courses, are used as resting places by birds, and Least Terns are known to court on the beach. In addition, those sandy areas which are tidally inundated may contain seawater puddles in which birds may forage.

The open water surrounding Alameda as well as the mudflats around the South Shore of the Main Island and west of Bay Farm Island also function as significant habitat. The open waters of the Bay provide foraging areas for fish-eating birds, as well as the substrate for the many life forms which live in the water column and on the Bay floor. The organisms which live in the mudflats provide a rich pantry of invertebrate fauna and algal growth.

(Figure 5-1: Environmental Resources, amended in GPA 96-2)

Two separate beds of eelgrass provide distinctive habitat for marine organisms living in the waters off of Alameda. The bed which is southwest of Bay Farm Island is believed to be the richest grass bed left in San Francisco Bay, with respect to the presence of small animals. The grass is long and wide, grows quickly, and dozens of common species are known to be associated with this bed of eelgrass. The endangered Least Terns are known to forage on herring living in and around this eelgrass. The second bed of eelgrass off of Alameda, although shorter and growing in shallower water, probably also provides a nursery for fish species which the Least Terns nesting at Alameda Point (GPA 01-01) forage. This bed is located off of Crab Cove, the cove which stretches between the arm of Ballena Isle and Crown State Beach. (See Figure 5-1, Environmental Resources.)

WATER QUALITY

San Francisco Bay water quality varies with a measurement site's proximity and exposure to point and non-point sources of pollution. Despite the lack of a coordinated system of measurement, it is known that since the 1950s water quality in the Bay has improved markedly, due in large part to the upgrading of municipal sewage treatment facilities.

Municipal sewage discharges and industrial wastewaters are regulated as point sources by the Regional Water Quality Control Board (RWQCB), while non-point sources include polluted urban runoff from streets and parking lots, erosion from construction sites, pollutants in fresh water inflow, pollutants from toxic waste sites and dumps of all kinds, direct spills of pollutants to the Bay, dredging, and vessel waste discharges.

Monitoring done by the RWQCB has focused primarily on the impacts of point-source pollutants, although a regional monitoring network for water and sediment quality -- to be developed by 1993 -- will also analyze non-point source pollution. Once the network is in place, more water quality information will be available for analysis.

WATER CONSERVATION

As of 1990, the fourth year of lower-than-normal rainfall, the East Bay has reduced its water use to 84 percent of its 1986 levels, the levels which represent the last year of normal rainfall. Since water storage is still 25 percent below normal levels, EBMUD urges customers to continue to conserve.

In addition to conservation measures appropriate for individual households, such as the use of low-flow showerheads, aerating faucets, and smaller-capacity toilets and urinals, the East Bay Municipal Utility District (EBMUD) recommends that existing and new landscaping design incorporate EBMUD's water-conserving Landscape Requirements. In 1988, the City of Alameda Ordinance 2389 added a chapter on Water Conservation to the Municipal Code, specifying landscape design and practices.

A user agreement has just been signed (June 1990) between EBMUD and the Alameda Municipal Golf Courses for the former to supply reclaimed wastewater from the San Leandro Treatment Plant for irrigation use on parts of the golf courses, as a step towards implementing EBMUD's Alameda Reclamation Project. This measure is intended to conserve drinking water which would otherwise be used in landscape irrigation. Construction of additional treatment facilities to improve the quality of reclaimed wastewater, and to supply the treated water for Alameda median strips (Harbor Bay Parkway and Airport Drive) and other landscaped portions of the City is anticipated over the next several years.

A Reclamation Master Plan, to be published in mid-1990, will govern EBMUD's wastewater reclamation program until the year 2000. The Reclamation Master Plan may call for new development within the service area -- including Alameda -- to design irrigation systems to use reclaimed wastewater, where available in an acceptable quality.

URBAN HABITAT

"Urban habitat" refers to those areas of the City which provide a land-based living and feeding environment for birds and mammals. This might include Alameda's parks, street trees, parkway and median-strip landscaping, yard trees, the golf courses, and vacant lots. With nearly 14,000 street and park trees (1990) and an uncounted number of yard trees, the City is set within and framed by an urban forest. The leafy green canopy provides food and shelter for many creatures, and contributes toward a verdant community. Lower-growing shrubs and grasses -- both those planted intentionally, and accidental introductions -- also provide habitat.

The Street Tree Inventory identifies 3,634 vacant street planting sites, and the General Plan identifies the Inventory as a guiding reference document for the development of the urban forest. A statewide California Urban Forest Survey done in 1989 calculated an existing street tree per urban resident ratio of 1:4. The 1990 Alameda ratio is approximately 1:6, although at build-out the ratio is expected to be 1:5, about one street tree for five residents. The number of appropriate street trees for Alameda is based on more than a statewide ratio, of course, and Section 3, the City Design Element, guides the visual development of the City.

(Photo: Large trees give Central Avenue stately character.)

WILDLIFE AND VEGETATION

The above discussion of habitats sets the stage for a mention of their inhabitants. Habitats function interdependently with their inhabitants. Trees and other vegetation may be viewed as both providing habitat and as dwelling within a larger habitat. This section briefly describes individual species which make up the wetlands and water-related habitat areas, and those species which inhabit the urban portion of Alameda.

Natural terrestrial and shoreline habitats have been drastically modified throughout the City as a result of development. Open water habitats, while less obviously modified, have still been affected. As a result of this habitat modification, the vegetation, insects, fish, birds, and mammals which are present today represent both remnants of a past landscape and more recent introductions, intentional and accidental. Several of the plants or animals described herein are recognized as species of special status, and Alameda is fortunate to contain unique habitat that supports members of species which are known to be diminishing throughout all or part of their natural ranges.

According to the State Department of Fish and Game, a variety of fish, shrimp, and crab inhabit the waters surrounding Alameda, some of the more common including:

Yellowfin Goby
(*Acanthogobius flavimauus*)

American Shad
(*Alosa sapidissima*)

Speckled Sanddab
(*Citharichthys stigmaeus*)

Shiner Surfperch
(*Cymatogaster aggregata*)

White Croaker
(*Genyonemus lineatus*)

Staghorn Sculpin
(*Leptocottus armatus*)

Bat Ray
(*Myliobatus californicus*)

Starry Flounder
(*Platichthys stellatus*)

Striped Bass
(*Roccus saxatilis*)

Leopard Shark
(*Triakis semifasciata*)

Dungeness Crab
(*Cancer magister*)

Oriental Shrimp
(*Palaemon macrodactylus*)

White Sturgeon
(*Acipenser transmontanus*)

Jacksmelt
(*Atherinopsis californiensis*)

Pacific Herring
(*Clupea harengus*)

Northern Anchovy
(*Engraulis mordax*)

Bay Goby
(*Lepidogobius lepidus*)

Brown Smoothhound
(*Mustelus henlei*)

English Sole
(*Parophrys vetulus*)

Northern Midshipman
(*Porichthys notatus*)

Longfin Smelt
(*Spirinchus thaleichthys*)

Bay Shrimp
(*Crangon sp.*)

Mud Crab
(*Hemigrapsus oregonensis*)

Spider Crab
(*Pyromaia tuberculata*)

California cordgrass (*Spartina foliosa*) is present in the Bayview Shoreline Preserve. This species and the Eelgrass (*Zostera marina*) which grows in several locations off of Alameda and Bay Farm islands are of prime importance to the aquatic and wetlands ecosystems. The endangered California

Clapper Rail (*Rallus longirostris obsoletus*) is known to frequent cordgrass areas, including those comprising the Bayview Shoreline Preserve and in the nearby Arrowhead Marsh. The endangered Least Tern nests at Alameda Point (GPA 01-01) and Oakland Airport, and forages for Pacific Herring which are found in the eelgrass beds. The Alameda song sparrow (*Melospiza melodia pusillula*), one of several unique sub-species of song sparrow unique to the San Francisco Bay, is listed by the State Department of Fish and Game as a species of special status and was categorized by the Federal Government in 1989 as a Candidate 2, a species being considered for listing by the U. S. Fish and Wildlife Service.

The Department of Fish and Game and the local Audubon Society monitor the presence and condition of both water-orientated and land orientated bird species. According to them, shore-inhabiting birds which have been observed around Alameda, include:

Snowy Plover
(*Charadrius alexandrinus nivosus*)

Common Loon
(*Gavia immer*)

California Brown Pelican
(*Pelicanus occidentalis*)

Double-breasted Cormorant
(*Phalacrocorax auritus*)

Harlequin Duck
(*Histrionicus histrionicus*)

Barrow's Goldeneye
(*Bucephala islandica*)

Northern Harrier
(*Circus cyaneus*)

California Black Rail
(*Laterallus jamaicensis*)

California Gull
(*Larus californicus*)

Salt Marsh Yellowthroat
(*Geothlypis trichas sinuosa*)

Elegant Tern
(*Sterna elegans*)

Land birds thought to be present at least occasionally within the City of Alameda and vicinity include the Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*), Short-eared Owl (*Asio flammeus*), and Burrowing Owl (*Athene cunicularia*). All of these species are considered to be of special status: rare, threatened, endangered, or a candidate for such listing. Dozens of more common species are also present.

The Burrowing Owl is of considerable interest locally. This small diurnal owl, which tends to inhabit open country, finds its niche in urban areas where open spaces, such as at airports and vacant lots, resemble that of its natural habitat. Known historically to inhabit ground squirrel burrows on Bay Farm Island, a colony was moved from its natural habitat in the Harbor Bay Isle area to a burrows constructed at the Municipal Golf Courses.

The Salt Marsh Wandering Shrew (*Sorex vagrans halicoetes*), another species of special status, was known to inhabit the Oakland Airport in 1950, and it is assumed that it still may be present. A mole which is known only to the Island of Alameda and called, appropriately, the Alameda Island Mole (*Scapanus latimanus parvus*) is to be listed in 1991 by the Department of Fish and Game as a species of special concern. It is unknown where the mole is living at this time. Other animals which might be expected to be present within the landward urban portion of Alameda include field mice, ground squirrels, jack rabbits, opossums, raccoons, and domestic animals, such as dogs and cats.

Common plants found on the golf courses, vacant lots, and parks include such grasses as barley and wild oats, several species of thistle, many species of the mustard family, and a wide variety of shrubs. Unusual plants which may be present include the salt marsh-dwelling Pt. Reyes Bird's Beak (*Cordylanthus maritimus spp. palustris*), the flowering aromatic herb Adobe Sanicle (*Sanicula maritima*), and the Monterey Spineflower (*Chorizanthe pungens var pungens*).

On residential sites and along the streets, in parks, and on the golf courses, most plants are non-native ornamental shrubs and trees. The Alameda Tree Inventory identifies approximately 12,000 trees, with the London Plane Tree (*Platanus acerifolia*) constituting 16 percent of the total Alameda urban forest. The Ginkgo (*Ginkgo biloba*) is the next most common, making up 9.4 percent. The oldest trees, identifiable by their greater-than-24" diameter, account for about 5 percent of the population, and are dominated by London Plane, Liquidambar (*Liquidambar styraciflua*), and American Elm (*Ulmus americana*).

Guiding Policies: Open Space for the Preservation of Natural Resources

5.1.a Preserve and enhance all wetlands and water-related habitat.

Water-related habitat includes open water, Bay bottom, mudflats, uplands, sandy areas, lagoons, and sloughs. Since the various Bay wetlands are linked ecologically, preservation of nearby Arrowhead, Fan, and Damon marshes would aid in the preservation and enhancement of Alameda's wetlands, including those at the Elsie D. Roemer Bird Sanctuary and Bayview Shoreline Preserve.

5.1.b Protect Open Space-Habitat areas, including sensitive submerged tidelands areas (mudflats) and eelgrass beds, from intrusions by motorized recreational craft, including jet skis and hovercraft.

5.1.c Continue to prohibit filling of water-related habitat except in those limited cases in which a strong public need clearly outweighs the habitat preservation need, and where approval is granted by the appropriate agencies.

5.1.d Preserve buffers between wetlands and urban uses.

The California Department of Fish and Game recommends buffers of between 50 and 100 feet, to separate and protect the two land uses. Since Alameda is nearly built out, buffer size may need to be adjusted so that parcels rendered unbuildable by the application of this standard.

- 5.1.e Continue to preserve and maintain all lagoons as habitat as well as visual and compatible-use recreational resources.

Forster's Terns and diving ducks, among other species, use the lagoons for foraging.

- 5.1.f Deleted: (GPA 01-01)

- 5.1.g Conduct all dredging in compliance with the Long Term Management Strategy, Management Plan, prepared by the USACE, USEPA, BCDC, and SFRWQCB. (GPA 01-01)

- 5.1.h Continue to support EBMUD in its efforts to promote and implement water conservation measures.

Alameda City government's largest water consumer is the Recreation and Park Department (ARPD), and the ARPD has cut its water use by about 20 percent by eliminating wasteful watering habits and by planting drought-resistant ground cover. (GPA 01-01)

- 5.1.i Encourage the use of drought-resistant landscaping.

- 5.1.j Use the City of Alameda Street Tree Management Plan as the guiding reference when considering action which would affect the trees contained in the urban forest.

After presenting a thorough inventory of the location, composition, condition, and maintenance needs of City-maintained trees, the Street Tree Management Plan presents recommendations for planting and tree maintenance.

Implementing Policies: Open Space for the Preservation of Natural Resources

- 5.1.k Ban the use of jet skis and hovercraft within the Elsie D. Roemer Bird Sanctuary and San Leandro Channel at all times, and San Leandro Bay only during critical bird nesting periods.

The East Bay Regional Park District has contemplated such a move, planning to enforce its ban through the use of police boats or planes.

- 5.1.l Work with local recreation groups to disseminate information regarding the sensitivity of Open Space-Habitat areas to intrusions by motorized craft.

Crab Cove Visitor Center and other local educational resource centers could participate in an information dissemination campaign.

- 5.1.m Post and maintain signs warning boaters and users of motorized craft that they are approaching a wildlife area.
- 5.1.n Inventory existing wetlands and water-related and other habitats to create a comprehensive map of sensitive biological and botanical resources, to better protect these resources.

Figure 5-1, Environmental Resources, is based on a compilation of available sources on wetland and water-related habitat. Public and private organizations are encouraged to conduct field surveys to contribute detail on the extent and importance of these and other potentially unidentified habitat areas.

- 5.1.o Complete the Bayview Shoreline Preserve Improvement Plan.
- 5.1.p Require that proposed projects adjacent to, surrounding, or containing wetlands be subject to a site-specific analysis which will determine the appropriate size and configuration of the buffer zone.

The size and configuration of the buffer zone should be based on the characteristics and importance of the wetlands and the proposed project. The purpose of the buffer zone will be to ensure the long-term viability of the wetlands area, which may include provisions for off-site needs such as upland nesting habitat.

- 5.1.q Work with the East Bay Regional Park District and other appropriate agencies to improve, protect, and preserve Crown Memorial State Beach and the Alameda Beach as habitat as well as recreational resources.

The boundary between Crown Memorial State Beach and Alameda Beach lies at Westline Drive. The presence of people and dogs along the beaches limits beach habitat value for nesting birds, although biologists have observed Least Terns courting on the sand and on offshore buoys at Crown Beach. The ban on allowing dogs to run without leashes should be strictly enforced, for the protection of all, including the dogs.

- 5.1.r Continue to participate in the Alameda County Non-Point Source Task Force.

The Task Force is made up of public works directors or representatives from each city within Alameda County, and is engaged in organizing the implementation of the Non-Point Source Control Program, to ensure continued improvement of Bay water quality. Non-point sources of pollution include polluted urban runoff, construction site erosion, pollutants in fresh water inflow, pollutants from toxic waste sites and dumps, direct spills of pollutants to the Bay, dredging, and vessel waste discharges.

- 5.1.s Participate in the Non-Point Source Control Program (NPSC).

Although not fully designed, the NPSC Program is anticipated to include measures for prevention of contamination and source control of pollutants. Treatment of urban runoff, while potentially effective, is costly, and prevention and source control are the preferred methods of abatement. The main objective of the NPSC Program is to ensure that only storm water enters the storm drains, which will involve eliminating illegal connections and strict surveillance and enforcement of "no dumping" mandates. Educational as well as regulatory strategies are under consideration.

As a part of the NPSC Program, by mid-1991 the City will prepare a report for submittal to the RWQCB, characterizing local pollutant types and amounts, and a plan for implementing a control program.

- 5.1.t Consider adopting City standards in addition to those adopted by the County, to deal with non-point source water pollution problems such as sheet flow storm runoff and sedimentation affecting sensitive water habitats.

- 5.1.u Participate in the County Hazardous Waste program and/or consider establishment of hazardous waste and/or oil disposal or transfer sites.

The dearth of available hazardous waste and motor oil disposal sites may lead citizens to pour dangerous materials into storm drains. Establishment of such sites allows the City more control over substances which could contaminate the Bay. See also policies contained in the Health and Safety Element.

- 5.1.v Participate in the identification of agencies responsible for the cleanup of toxic materials within the Oakland Estuary, and support them in their efforts.

- 5.1.w Require new marinas and encourage existing marinas to provide easily accessible waste disposal facilities for sewage and bilge and engine oil residues.

- 5.1.x Prevent migration of runoff off-site or into wetlands areas and water-related habitat by requiring that proposed projects include design features ensuring detention of sediment and contaminants.

Project design should specify techniques to be used to detain runoff. On-site inspection during construction may be necessary to ensure that designs are realized.

- 5.1.y Work with EBMUD to implement the Alameda Reclamation Project.

The Alameda Reclamation Project anticipates the increased use of reclaimed wastewater for landscape irrigation throughout the City.

- 5.1.z Develop a comprehensive City Water Conservation Ordinance that recognizes Alameda's unique climate, soil conditions, and development patterns.
- 5.1.aa Review proposed development projects for both water and energy efficiency, and integrate plans for the use of reclaimed wastewater for landscaping as a condition of approval.
- 5.1.bb Require a biological assessment of any proposed project site where species or the habitat of species defined as sensitive or special status by the California Department of Fish and Game or the U.S. Fish and Wildlife Service might be present.

Listings of sensitive and special status species change from year to year, but might include birds, animals, and plants such as the California Least Tern, California Clapper Rail, Burrowing Owl, Alameda Island Mole, Salt Marsh Wandering Shrew, Adobe Sanicle, Pt. Reyes Bird's Beak, and Monterey Spineflower.

- 5.1.cc Implement the City's Street Tree Management goal of planting trees in all vacant street tree sites within 10 years.
- 5.1.dd Develop and implement planting and herbicide, pesticide, and fertilizer application plans, including a pesticide drift control plan, for the golf course and public open space areas.
(GPA 01-01)

5.2 OPEN SPACE FOR THE MANAGED PRODUCTION OF RESOURCES

This section of the Open Space Element is required to address the commercial value and use of open space lands. The General Plan does not designate any land as Open Space for the Managed Production of Resources, but does recognize the function of Bay waters and vegetation as fish nurseries, some of which may be of value to commercial fishing production. A discussion of the more common fish, shrimp, and crab species is found in Section 5.1.

Guiding Policies: Open Space for the Managed Production of Resources

- 5.2.a Protect and preserve Bay waters and vegetation as nurseries and spawning grounds for fish and other aquatic species, both as a part of habitat preservation and to encourage continued use of the Bay for commercial fishing production.

Implementing policies ensuring protection and preservation of Bay waters and vegetation may be found in Section 5.1.

5.2.b Explore interest in public and privately owned sites available for community gardens.

5.3 OPEN SPACE FOR OUTDOOR RECREATION

The General Plan discusses the need to maintain and expand the City's inventory of parks and recreation facilities. Text and policies reviewing the value of open space for outdoor recreation are found in Section 6, the Parks and Recreation, Shoreline Access & Development, Schools and Cultural Facilities Element.

5.4 OPEN SPACE FOR PUBLIC HEALTH AND SAFETY

The proximity of the (Text deleted pursuant to GPA 01-01) Metropolitan Oakland International Airport requires the establishment of safety zones for landing aircraft. Text and policies pertaining to safety zones are found in Section 7, the Airports Element. Policies specifying the preservation of unbuilt areas within flood plains subject to the 100-year flood are listed in the Health & Safety Element, within Section 8.3.

5.5 CLIMATE AND AIR QUALITY

Alameda is normally exposed to an influx of marine air from the west, having a climate which is cool and wet in the winter and relatively cool in the summer, with fog or wind. The high-pressure cell which lies over the Pacific Ocean contributes to the dryer air in summer, and its movement to the south during the winter exposes the Bay Area to wet weather.

Like all Bay Area cities, Alameda experiences both the general Bay Area climate and air quality, and the local variations on these patterns caused by specific location and topography. Some interior sections of Alameda are warmer than the maritime norm, and are more sheltered from the winds. Similarly, locations toward the outer edges of Alameda and Bay Farm islands experience the force of the winds more directly. Early travelers' historical accounts of the City often commented on Alameda's relatively fog-free climate, particularly in contrast to San Francisco.

The constant flow of relatively clean air through the Golden Gate results in good air quality compared with other parts of the Bay Area. There is no air quality measurement instrumentation in Alameda, however, and the closest sampling stations are in Oakland and San Leandro. These stations, both of which measure ozone and one of which (Oakland) measures carbon monoxide levels, indicate few days exceeding State or Federal air quality standards in recent years. (See Table 5-1.)

TABLE 5-1

**AIR POLLUTION AT THE BAAQMD's
OAKLAND AND SAN LEANDRO STATIONS 1987 AND 1988;
and AMBIENT AIR QUALITY STANDARDS**

	O₃			CO	
	MA	Days NTL	CA	MA	Days NTL
1987 (Oakland)	9	0	0	4.9	0
1987 (San Leandro)	9	0	0	--	--
1988 (Oakland)	10	0	1	6.0	0
1988 (San Leandro)	8	0	0	--	--
Averaging Time	1 hour			8 hours	
California Ambient Air Quality Standards		9		9	
Federal Ambient Air Quality Standards		12		9	

Table 5-1 Notes: MA = Maximum Average Value
 "Days" columns give the number of days per year on which an air quality standard was exceeded, either nationally (NTL) or within California (CA).
 O₃ (ozone) is measured in pphm (parts per hundred million).
 CO (carbon monoxide) is measured in ppm (parts per million).
 These monitoring stations do not measure Nitrogen Dioxide, Sulfur Dioxide, or Total Suspended Particulates.

Source: Bay Area Air Quality Management District (BAAQMD) Meteorology and Data Analysis Section.

Although the data from these two stations usually are generalized to include Alameda, the City's position between the former (GPA 01-01) Naval Air Station airport and the Metropolitan Oakland International Airport raises a question as to whether proximity to airports increases air pollution. In a 1971 study by the Bay Area Air Pollution Control District, the Oakland Airport was judged to possess marginal pollution potential for the vicinity, and former (GPA 01-01) Naval Air Station

activity was anticipated to lead to occasional episodes of increased pollutant levels. No current study of this issue is underway.

The computer model URBEMIS #2, developed by the California Air Resources Board, projects the following changes in the amounts of the three most important contaminant gases, when buildout is reached within Alameda:

Carbon Monoxide (CO):	23% decrease
Nitrogen Dioxide (NO ₂):	9.4% decrease
Reactive Organic Gases:	5% decrease

The decreases are due to projected increases in automobile engine efficiency built into the model. It should be noted that this model is based on numerous assumptions regarding trip patterns, which are in turn based on population and land use projections. If any of these patterns change between the base year (1990) and the buildout year (assumed to be 2010), then actual production of contaminants may differ significantly from the projections.

The URBEMIS #2 model does not include emissions projections for the Oakland Airport, nor for the former (GPA 01-01)NAS Alameda. The former (GPA 01-01) NAS was identified in 1987 by BAAQMD as a major point source of air pollution in the Bay Area; it produces measurable amounts of carbon monoxide, nitrogen dioxide, sulfur dioxide, total organic gases, and particulate matter.

The URBEMIS #2 model also does not take into account the potential air quality problems associated with the methane gas produced at the former sanitary landfill on Bay Farm Island. The City has engaged a private contractor to siphon or "bleed off" methane gas, which is produced as a by-product of decomposing materials at Mt. Trashmore. The process is expected to last at least six to 10 years (until perhaps the year 2000), by which time the amount of gas produced is expected to have diminished.

Regionally, the most severe and complex air quality problem is the relatively high level of ambient ozone experienced during inversions in summer and fall. Ozone is not emitted directly into the atmosphere, but is produced in the atmosphere through a complex series of photochemical reactions involving hydrocarbons, nitrogen oxides, and sunlight. No single source accounts for most of the hydrocarbon and nitrogen oxide emissions, and many sources are spread throughout the region.

Because so much of the Bay Area's air pollution problem is attributable to motor vehicles, improving transportation facilities to reduce vehicle hours of travel will improve air quality. (See Section 4.2, Transportation Element, on Transportation Systems Management.)

Guiding Policies: Climate and Air Quality

5.5.a Strive to meet all Federal and State standards for ambient air quality.

Table 5-1 lists the air quality standards for all significant contaminant gases. These standards are subject to change, and in fact have changed since 1975.

- 5.5.b Support continued monitoring efforts by the Bay Area Air Quality Management District.

Implementing Policies: Climate and Air Quality

- 5.5.c Encourage use of public transit for all types of trips.

See policies in Section 4.3 in the Transportation Element.

- 5.5.d Encourage development and implementation of Transportation System Management (TSM) programs.

See Transportation Element policies (4.2.a and 4.2.b).

- 5.5.e Minimize commuting by balancing jobs and nearby housing opportunities.

Buildout of Alameda will create four jobs for every three employed residents, minimizing out-commuting. A surplus of jobs in Alameda is likely to result in less travel than if these office/business park jobs were at alternative outlying locations.

5.6 HISTORIC AND ARCHAEOLOGIC RESOURCES

Alameda's history and prehistory are reflected throughout the City in the pattern and names of streets, the placement and style of homes and businesses, and in commemorative markers posted in public places. Alamedans are well aware of the recent history of their community, as is evidenced in the existence of such groups as the Alameda Victorian Preservation Society, formed in 1972. The group is dedicated to preserving the historic character of the City, increasing awareness and appreciation of Alameda's historic roots, and providing historic building restoration and rehabilitation information to citizens.

The creation of a Historical Advisory Board, the City's identification of historic districts and Heritage Areas, and efforts to revitalize older, historic business districts through participation in the Main Street Project all indicate Alameda's continuing commitment to celebrating the Island's past. In addition, the City adopted an optional Historic Preservation Element in 1980 with two major goals: nurturing an understanding and appreciation of the City's history and architecture, and the preservation of Alameda's historical and architectural resources. The policies in this section are intended to supplement the Element's recommendations for an education and preservation program.

Prehistoric Period. The Coastal Miwoks lived within the protection of the oak forest that blanketed the Encinal peninsula, a peninsula fringed on its northern and eastern shores with cordgrass and pickleweed marsh. It later became the Island of Alameda. Until the early 1900s, at least a half-dozen huge shellfish mounds punctuated the landscape, refuse heaps whose contents attested to the hunting, fishing, and gathering way of life of the earliest inhabitants. When excavated, the largest mound, 400 feet long by 150 feet wide by 14 feet high and encompassing an area bounded by Central Avenue, Court Street, Johnson Avenue, and Gibbons Drive, was found to cover burial grounds. In 1908 the contents of this mound were hauled to Bay Farm Island and used for paving and filling material. Mound Street passes through the original shellmound location, and additional artifacts lie buried beneath the urban hardscape.

The California Archaeological Inventory reports that with only 5 percent of the General Plan Project Area surveyed, seven prehistoric archaeological sites have been identified, and there is a high probability of additional resources in unsurveyed areas. Policies within this section anticipate future finds. The types of artifacts which might be expected to be found are those typical of Bay Area settlements near existing or former marshland, including mortars and pestles, obsidian knives, weapons, or projectile points, and bone needles or other small tools. Obsidian, chert and other stone with which the tools and the weapons were composed is not native to Alameda, suggesting Coastal Miwoks had trade connections with mainland or inland tribes. Other prehistoric resources that could be discovered within Alameda might include dark, crumbly soil containing shell and bone dietary debris, heat-affected rock, or human burials.

Historic Period. European settlement began in the late 1700s with the arrival of the Spanish, initiating a period of land appropriation and subdivision which ultimately displaced Alameda's earliest inhabitants. By the late 1800s, settlement existed at three disparate locations on the peninsula, with a main road (now Central Avenue) and a railroad line linking the settlers. The large-scale transformation of the landscape was already taking place, with some wetlands being diked and filled, and the initiation of a Federal government project which would take nearly 30 years to complete: the dredging of a Tidal Canal between the peninsula and the mainland, severing Alameda from the shore.

The California Gold Rush brought a huge influx of population to the Bay Area in the mid-1800s. Among these settlers were several entrepreneurs who would subdivide the peninsula and sell tracts for residences and orchards. The pace of settlement within Alameda remained steady during the last three decades of the century as rail and ferry projects connected Alamedans to one another, to the rest of the Bay Area, and, indeed, to the rest of the country. The corner of Lincoln and Webster streets is noted for being the location of the terminus of the first transcontinental railroad; a Central Pacific train completed a cross-continental journey for the first time in 1869. The late 1800s also left their mark within the City in the form of the Victorian homes which may be seen throughout Alameda.

The California Archaeological Inventory notes that the City contains many properties of recognized historic value. The National Register of Historic Places lists 10 properties, the California Inventory

of Historic Places lists five properties, and California Historical Landmarks lists one property. A historic resources inventory conducted in 1979-1980 resulted in the identification of 663 historic properties within the General Plan Project Area. A more recent survey suggests as many as 4,000 properties with historic value.

The early settlement date of this area and the prevalence of properties of historic value strongly suggest the existence of additional unidentified historic resources, both archaeological and architectural. Historic archaeological resources which might be expected include stone or adobe foundations or walls, structures and remains with square nails, and refuse deposits, often found in old wells or privies.

Guiding Policy: Historic and Archaeologic Resources

- 5.6.a Protect historic sites and archaeological resources for their aesthetic, scientific, educational, and cultural values.

Historic preservation programs, such as the measures proposed within the 1980 Historic Preservation Element, have been successful in preserving the small-town character of many California communities. See Section 3.3, Architectural Resources, for additional policies.

Implementing Policies: Historic and Archaeologic Resources

- 5.6.b Working in conjunction with the California Archaeological Inventory, review proposed development projects to determine whether the site contains known prehistoric or historic cultural resources and/or to determine the potential for discovery of additional cultural resources.
- 5.6.c Require that areas found to contain significant historic or prehistoric archaeological artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation.

The California Environmental Quality Act (CEQA) requires evaluation of any archaeological resource on the site of a development project. Unique resources, as defined by State law, should be protected, either by physical measures or by locating development away from the site. A preferred preservation method involves covering a site with earth fill for potential future, leisurely excavation; immediate excavation by qualified archaeologists should be undertaken only if such protection is infeasible.

- 5.6.d Update the Historic Preservation Element when funds allow.